BUILDING ENVELOPE EVALUATION REPORT

OF THE

SUMTER COUNTY COURTHOUSE

209 North Florida Street
Bushnell, FL 33513-6146

January 12, 2010

PREPARED FOR:

SUMTER COUNTY

PREPARED BY:

JAY AMMON ARCHITECT, INC.
3246 LAKEVIEW OAKS DRIVE • LONGWOOD, FLORIDA 32779 • FAX (407) 333-4686 • PHONE (407) 333-1977

JAY AMMON ARCHITECT, INC.

Sumter County, Florida

SUMTER COUNTY COURTHOUSE

BUILDING ENVELOPE EVALUATION REPORT

January 12, 2010

TABLE OF CONTENTS

INTRODUCTION

PROJECT BACKGROUND: Jay Ammon Architect, Inc. was commissioned by Sumter County to conduct a visual survey and provide an preliminary evaluation of the building envelope assemblies of the Sumter County Courthouse located at 209 North Florida Street, Bushnell, FL 33513-6146.

PROJECT OBJECTIVES: The purpose of this preliminary report is to provide the following information concerning the building envelope assemblies which include the exterior walls, exterior windows, exterior doors, and roof assemblies:

1. Identify the material type, condition, and the weather resistance characteristics of the assembly.
2. Provide repair recommendations for the assemblies.

EVALUATION PROCESS: The following procedures were completed for this preliminary evaluation of the building envelope:

1. Data Collection: Historical information was received from facility management personnel concerning the past and current performance and repair history of the building envelope assemblies.
2. Site Investigation: The exposed surfaces of the building envelope assemblies were examined by representatives of Jay Ammon Architect, Inc. on July 16, 2009 and on January 12, 2010 to determine material type and condition. Photographs were taken of the assembly and typical distresses.
3. Analysis: The information obtained in the Data Collection Phase and the Site Investigation Phase was analyzed to determine the current condition of the existing building envelope assemblies, the exposed distresses of the assembly, the prognosis of the assembly, and recommendation for repairs to the assembly.
4. Documentation: The information obtained was documented in this report and reviewed with representatives of Sumter County.

EXTENT OF EVALUATION: This report is base upon a visual examination of the building envelope assemblies. No testing or removal of components was conducted. Because of numerous concealed components, additional defective components not described in this report, may exist and additional recommendations may be required to include repairs to those components. This report is not intended to provide all the information necessary for the repairs. Detailed drawings and specifications should be prepared for the construction phase of the repairs. The construction phase of the repairs should be closely monitored by a qualified building envelope inspector.

This report was prepared by:

Jay Ammon, AIA
Jay Ammon Architect, Inc.

BUILDING HISTORY, BUILDING ENVELOPE COMPOSITION, AND PERFORMANCE

History:

1913	Original construction of Sumter County Courthouse.
Unknown Date:	Single story addition at South side of East façade of original courthouse.
1973	Single story addition at North side of East façade of original courthouse. Second Floor added to previous single story additions
1985	Third Floor added over second floor additions and stair towers added.
2001	Tile roof of original courthouse replaced.
2004	All other roofs replaced.

Existing Construction:

Original Courthouse: Roof Assembly: S clay tile mechanically attached over self adhered modified bituminous underlayment adhered over wood deck.

Exterior Wall Assembly: Solid brick wall covered on the interior with lath and plaster.

Exterior Windows Assembly: Solid painted wood frame and sash with single pane glazing.

Exterior Door Assembly: Solid painted wood frame and solid painted paneled wood doors.

Courthouse Additions: Roof Assembly A: Flat clay tile mechanically attached over underlayment over wood deck.

Roof Assembly B: Multiply granulated modified bituminous membrane applied over sloped roof deck.

Wall Assembly: Brick veneer over drainage cavity over concrete block infill in a cast-in-place concrete frame.

Window Assembly A: Painted Hollow metal frame with single pane glazing.

Window Assembly B: Mill finish aluminum frame with single pane glazing.

Exterior Doors: Mill finish aluminum frame and door with single pane glazing.

Performance of Building Envelope Assemblies:

Original Courthouse: Several leaks in ceilings of the below exposed brick walls above roof assemblies.

Courthouse Additions: Numerous leaks and extensive interior wall finish damage at exterior walls.

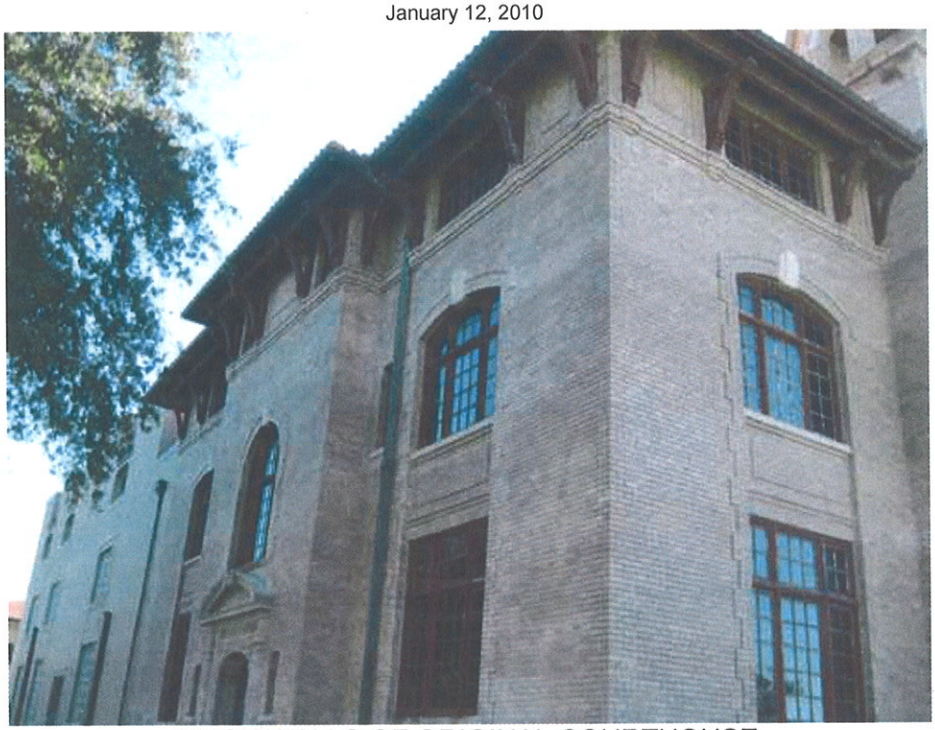
JAY AMMON ARCHITECT, INC.

Sumter County, Florida

SUMTER COUNTY COURTHOUSE

BUILDING ENVELOPE EVALUATION REPORT

January 12, 2010



BRICK WALLS OF ORIGINAL COURTHOUSE.

Assembly: Exterior Wall Type 1 of 2- Solid Brick Walls

Assembly Location: Exterior walls of original courthouse.

Assembly Condition: The solid brick walls are in fair condition. Solid masonry walls rely upon their mass to prevent intruding rainwater from reaching the interior finishes. This is defined as the reservoir capacity of the wall.

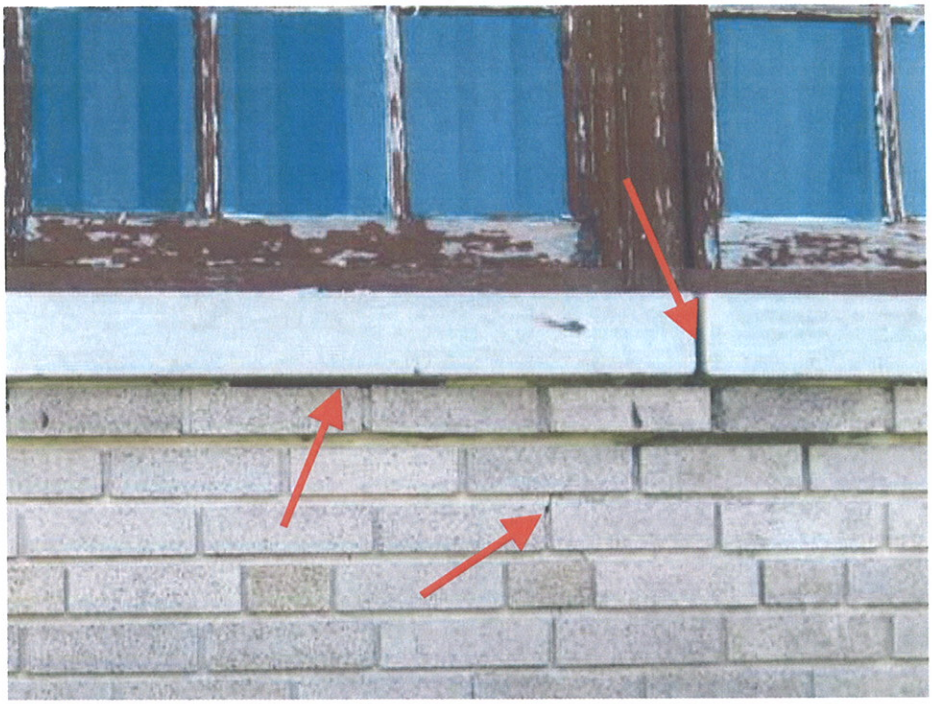
Component Condition: **Brick:** The brick is generally intact with only a few broken or cracked brick. Some brick are stained from efflorescence and also possibly from a application of a dampproofing product. The only water intrusion attributed to this assembly is through the assembly located above the tile roof and above the roofs of the additions where through-wall flashings were not installed.

Mortar: The mortar was installed in the brick joints with a raked shape. This type of joint is very vulnerable to rainwater intrusion because rainwater does not drain from the exposed top surface of the brick and often intrudes through the adjacent mortar joint. Also, a limited number of mortar joints are cracked or missing.

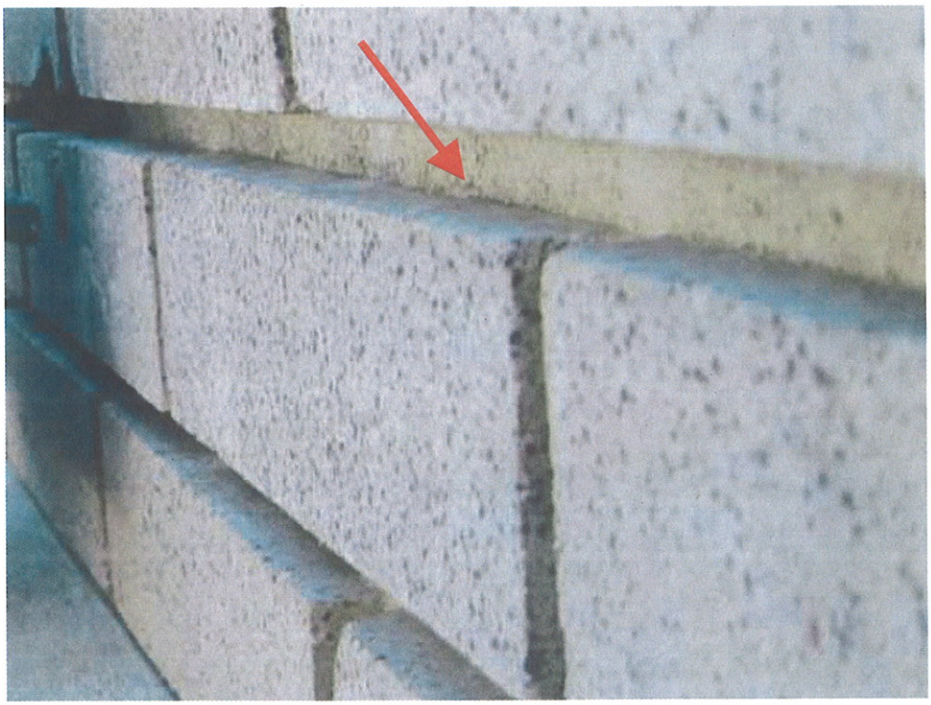
Prognosis: The defective mortar joints should be repaired to prevent the reservoir capacity from being exceeded and to improve the appearance of the facility. With proper repairs and maintenance, the brick walls can be expected to remain effective through the life of the building.

TYPICAL LACK OF DRAINAGE ABOVE TILE ROOF. NOTE SURFACE MOUNTED REGLET AT BASE OF BRICK WALL WHICH PREVENTS THE DISCHARGE OF WATER WHICH MIGRATES THROUGH THE BRICK ABOVE.

TYPICAL LACK OF DRAINAGE ABOVE ADDITION ROOF.



TYPICAL CRACKED AND MISSING MORTAR.



TYPICAL VULNERABLE RAKED MORTAR JOINT. WATER DOES NOT DRAIN FROM THE FLAT BRICK SURFACE AND OFTEN INTRUDES INTO MORTAR JOINTS.

BRICK WALLS OF ADDITIONS.

Assembly: Exterior Wall Type 1 of 2 - Brick Veneer Walls

Assembly Location: Exterior walls of additions.

Assembly Condition: The brick veneer walls are in poor condition with numerous area of water intrusion which has damaged interior wall and ceiling finishes. The following distresses are contributing to the severe water intrusion at the additions.

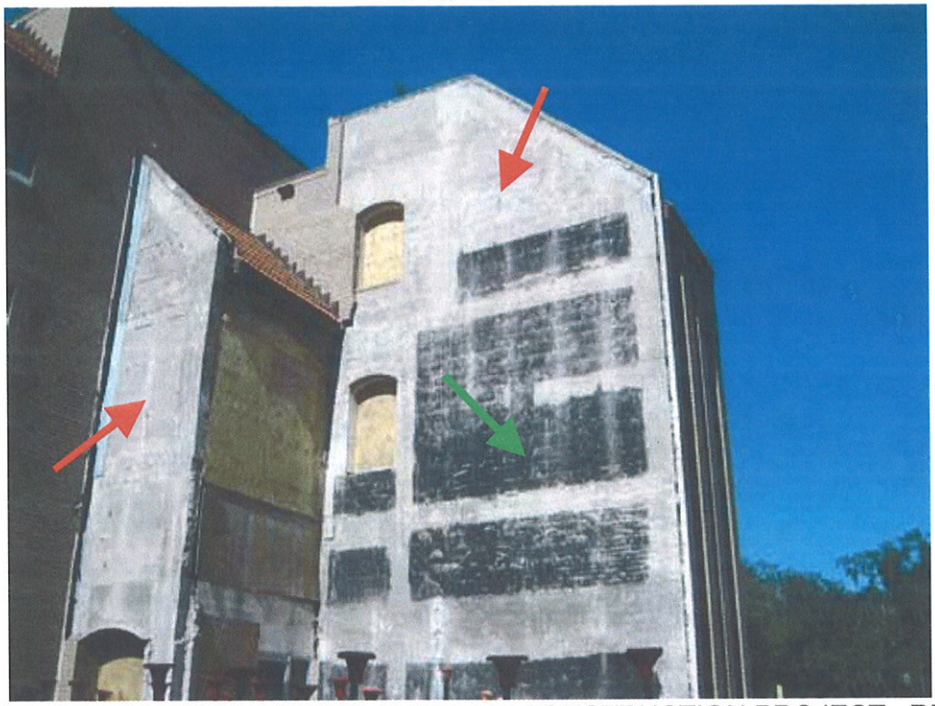
Component Condition:

Brick: The brick is generally intact with only a few broken or cracked brick. However, because of the relatively small mass of brick veneer walls, the walls rely upon waterproofing applied over the substrate behind the brick. Waterproofing was **not applied** over some of the concrete block surfaces.

Through-wall Flashings: Through-wall flashings were not installed over the exterior windows and doors preventing the proper discharge of rainwater from the drainage cavity.

Mortar: The mortar was installed in the brick joints with a raked shape. This type of joint is very vulnerable to rainwater intrusion because rainwater does not drain from the exposed top surface of the brick and often intrudes through the adjacent mortar joint. Also, a limited number of mortar joints are cracked or missing.

Prognosis: This wall assembly will require extensive repairs and maintenance to remain watertight.



BRICK REMOVED FROM WALL DURING CURRENT CONSTRUCTION PROJECT. RED ARROWS POINT TO TYPICAL LACK OF WATERPROOFING ON CONCRETE BLOCK. GREEN ARROW POINTS TO BLACK WATERPROOFING APPLIED OVER CONCRETE BLOCK.

TYPICAL LACK OF THROUGH-WALL FLASHING AT LINTEL ABOVE WINDOW.

TYPICAL EXTERIOR WINDOW TYPE 1 OF 3.

Assembly: Exterior Window Type 1 of 3 - Wood Framed Windows of original courthouse.

Assembly Location: Exterior walls of original Courthouse.

Assembly Condition: Poor

Component Condition: **Window Frame, Muntins, and Sash:** The wood is deteriorated with many open joints and deteriorated wood. Termites have infested some of the windows.

Finish: The windows have been repainted numerous times. The paint is severely deteriorated.

Window Hardware: The window hardware is no longer functional and the windows are now fixed.

Prognosis: The age of these windows is approximately 97 years. Numerous repairs would have to be completed to make these windows watertight and airtight. Termite damage repairs would require replacement of many window components. Because of the age of the windows, the most cost effective approach would be the replacement of the windows with an extruded aluminum window which replicates the historic significant appearance of the window.

TYPICAL TERMITE DAMAGE.

TYPICAL WOOD MUNTIN DETERIORATION.

TYPICAL EXTERIOR WINDOW.

Assembly: Exterior Window Type 2 of 3 - Steel framed windows of addition.

Assembly Location: Exterior walls of first addition.

Assembly Condition: Poor

Component Condition: **Window Frame and Muntins:** The painted steel is severely rusted.

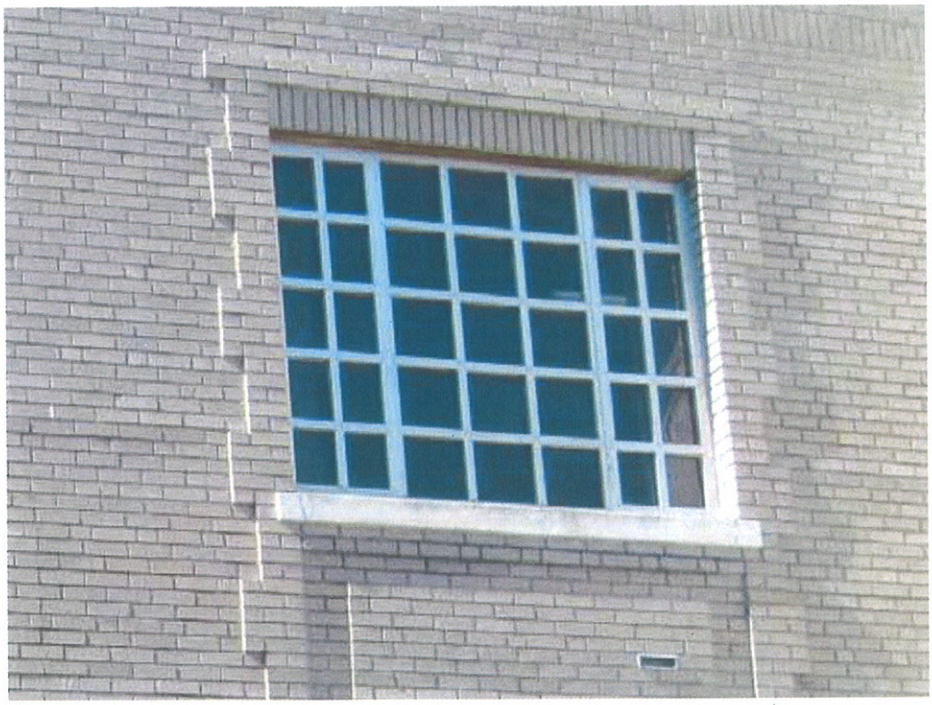
Finish: Most of the painted finish is deteriorated exposing the steel to the atmosphere, and causing the corrosion of the steel.

Prognosis: The age of these windows is approximately 36 years. The frames are fabricated from steel which is prone to corrosion unless the exterior surfaces are extensively maintained. Because of the age of the windows, and because of the high cost to repair the corroded portions of the windows, the most cost effective approach is to replace the windows with a corrosion resistant material such as aluminum.

SEVERELY RUSTED FRAME.

SEVERELY RUSTED FRAME.

EXTERIOR WINDOW TYPE 2 OF 3 - STEEL FRAMED WINDOWS OF ADDITION 3.4.1



TYPICAL EXTERIOR WINDOW TYPE 3 OF 3.

Assembly: Exterior Window Type 3 of 3 - Aluminum Framed Windows of Addition

Assembly Location: Exterior walls of second addition.

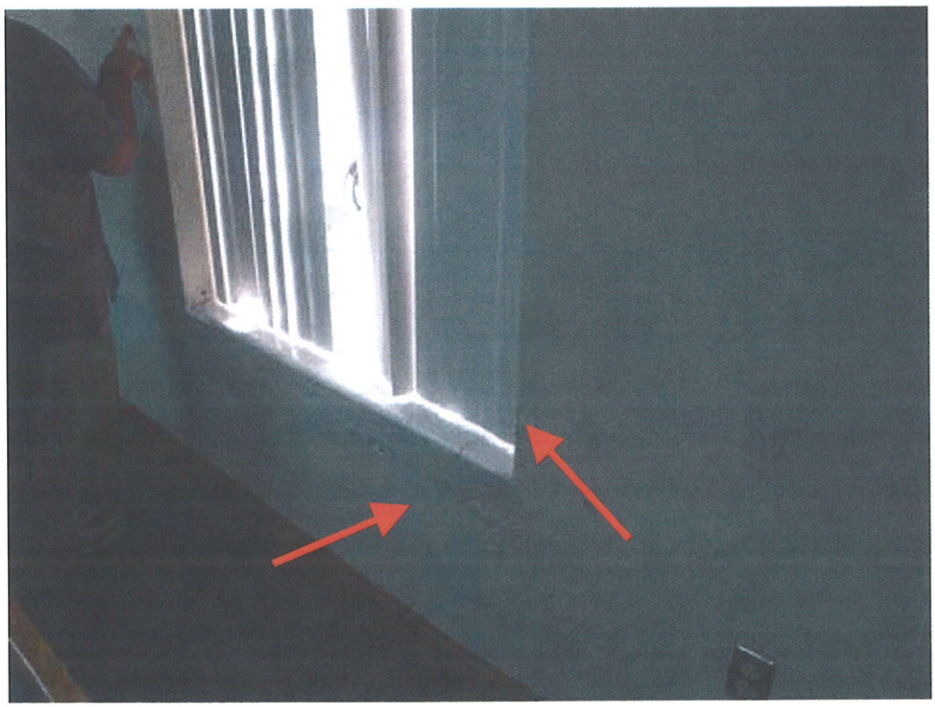
Assembly Condition: Poor

Component Condition: **Window Frame and Muntins:** The frames and Muntins are in good condition, however, the metal to metal, metal to glass, and metal to brick joints do not appear to be watertight.

Finish: The mill finish of the aluminum is in good condition.

Prognosis: The age of these windows is approximately 25 years. The frames are fabricated from aluminum and are still in good condition. However, many of the these windows are leaking. The source of the water intrusion has not been confirmed. The most probable path of the water intrusion is through unsealed joints associated with the window assembly. The other contributing source of the water intrusion may be the lack of through-wall flashings and the lack of waterproofing behind the brick veneer which is described in the evaluation of Wall Type 2. Because of the age of the windows, and because of the high cost to repair the window joints, the most cost effective approach is to replace the window with a corrosion resistant material such as aluminum.

WATER STAINED SASH OF WINDOW TYPE 3.



WATER INTRUSION BELOW AND ADJACENT TO WINDOW TYPE 3.

EXTERIOR WINDOW TYPE 3 OF 3 - ALUMINUM FRAMED WINDOWS OF ADDITION 3.5.1

TYPICAL EXTERIOR WOOD DOOR OF ORIGINAL COURTHOUSE.

Assembly: Exterior Door Type 1 of 2 - Wood Framed Door of Original Courthouse.

Assembly Location: Exterior walls of Original Courthouse.

Assembly Condition: Poor

Component Condition:

Door Frame: The wood is deteriorated with many open joints and deteriorated wood.

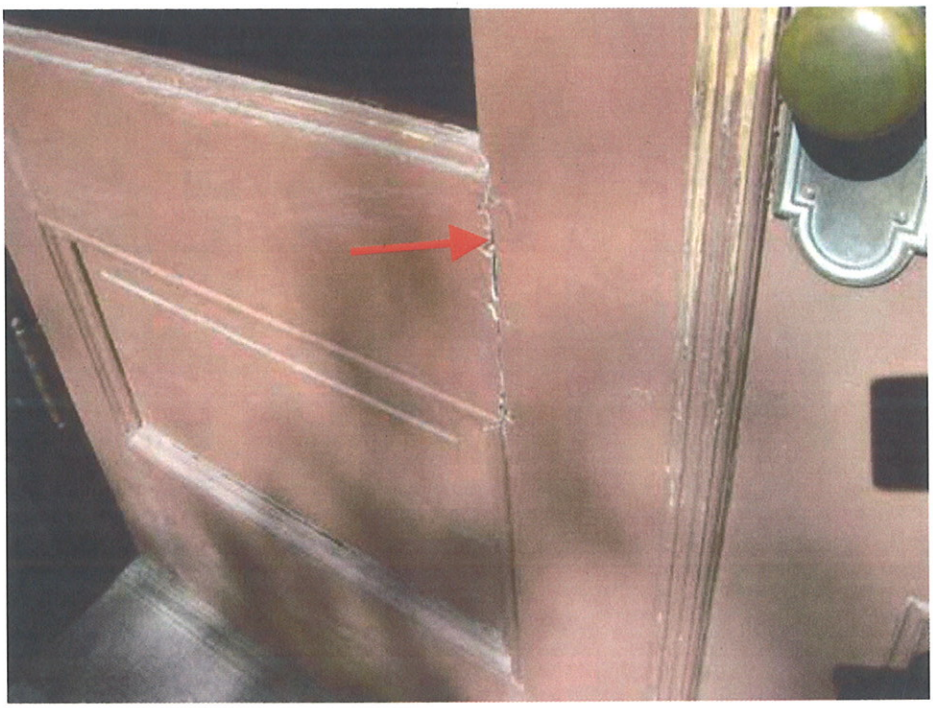
Door: The doors are in relatively good condition with minor deterioration.

Finish: The painted finish of the frame and door is slightly deteriorated.

Door Hardware: The door hardware has been maintained and is in relatively good condition.

Prognosis: The age of the door frames is approximately 97 years. Numerous repairs would have to be completed to make these frames watertight and airtight. Because of the age of the frames, the most cost effective approach would be the replacement of the frames with an extruded aluminum frame which replicates the historic significant appearance of the frame. Although the door could be reused, the replacement of the door with a solid wood paneled door would provide a door assembly which complies with current building codes and a total assembly warranty. The current age of the wood doors is unknown.

DETERIORATED WOOD FINISH.



UNSEALED WOOD JOINTS..

EXTERIOR DOOR TYPE 1 OF 2 - WOOD FRAMED DOOR OF ORIGINAL COURTHOUSE 3.6.1

TYPICAL EXTERIOR ALUMINUM DOOR OF ADDITIONS.

Assembly: Exterior Door Type 2 of 2 - Aluminum Framed Door of Additions.

Assembly Location: Exterior walls of additions.

Assembly Condition: Fair

Component Condition:

Door Frame: The aluminum is in good condition. However, the metal to metal, metal to glass, and metal to brick joints do not appear to be watertight..

Door: The doors are in relatively good condition with minor deterioration.

Finish: The aluminum finish of the frames and doors is in good condition.

Door Hardware: The door hardware has been maintained and is in relatively good condition.

Prognosis: The age of these doors is approximately 37 years. The frames are fabricated from aluminum and are still in good condition. The doors are protected under large overhangs. Because of the age of the doors, and because of the high cost to repair the door joints, the most cost effective approach is to replace the window with a corrosion resistant material such as aluminum.

DOOR TYPE 2 OF 2 PROTECTED UNDER OVERHANG.

DETERIORATED METAL TO METAL JOINT.

EXTERIOR DOOR TYPE 2 OF 2 - ALUMINUM FRAMED DOORS OF ADDITIONS 3.7.1

TILE ROOF ON ORIGINAL COURTHOUSE.

Assembly: Roof Type One of Three - Clay Tile

Assembly Location: Main Roof of Original Courthouse.

Assembly Condition: Good

Component Condition:

Tile: The clay tile was replaced approximately 9 years ago and is in generally good condition. The tile is mechanically attached to the substrate. Although most of the tile appears to be properly secured, some tile have been displaced and should be replaced.

Underlayment: The self adhered underlayment appears to be properly installed and is functioning as expected..

Metal Flashings: The copper flashings have recently been replaced and are in good condition.

Eaves: The paint of the eave and eave rafters is deteriorated although the wood is in good condition. The eave should be repainted to protect the wood.

Prognosis: The tile roofing assembly has recently been replaced and is in good condition. With proper repairs and periodic maintenance, the tile roofing assembly, can be expected to remain effective for an additional 25 to 30 years.

DISPLACED TILE AT THE ROOF'S INTERFACE WITH ADDITION. THIS TYPE OF UNDERLAYMENT DETERIORATES RAPIDLY WHEN EXPOSED TO SOLAR RAYS.

DETERIORATED PAINTED FINISH ON EAVE RAFTERS. BECAUSE OF THE PROTECTED POSITION UNDER THE TILE ROOFING ASSEMBLY, WOOD DETERIORATION IS NOT EVIDENT. HOWEVER, THE PAINT IS DETERIORATED.

ROOF TYPE 1 OF 3 - TILE ROOF OF ORIGINAL COURTHOUSE - 3.8.1

TILE ROOF ON ORIGINAL COURTHOUSE.

Assembly: Roof Type Two of Three - Clay Tile

Assembly Location: Steep Slope Roofs of Addition.

Assembly Condition: Good

Component Condition:

Tile: The clay tile was replaced approximately 5 years ago and is in generally good condition. The tile is mechanically attached to the substrate. Although most of the tile appears to be properly secured, some ridge tile have are not properly secured and should be reattached.

Underlayment: The underlayment appears to be properly installed and is functioning as expected..

Metal Flashings: The copper flashings are in good condition.

Prognosis: The tile roofing assembly is in good condition. With proper repairs and periodic maintenance, the tile roofing assembly, can be expected to remain effective for an additional 25 to 30 years.

TILE APPEARS TO BE PROPERLY INSTALLED.

SEVERAL RIDGE TILE APPEARED TO BE LOOSE.

ROOF TYPE 2 OF 3 - TILE ROOF OF ADDITION - 3.9.1

MODIFIED BITUMINOUS ROOF ASSEMBLY ON ADDITION.

Assembly: Roof Type 3 of 3 - Modified Bituminous Roof Membrane of Addition.

Assembly Location: Low Slope Roofs of Addition.

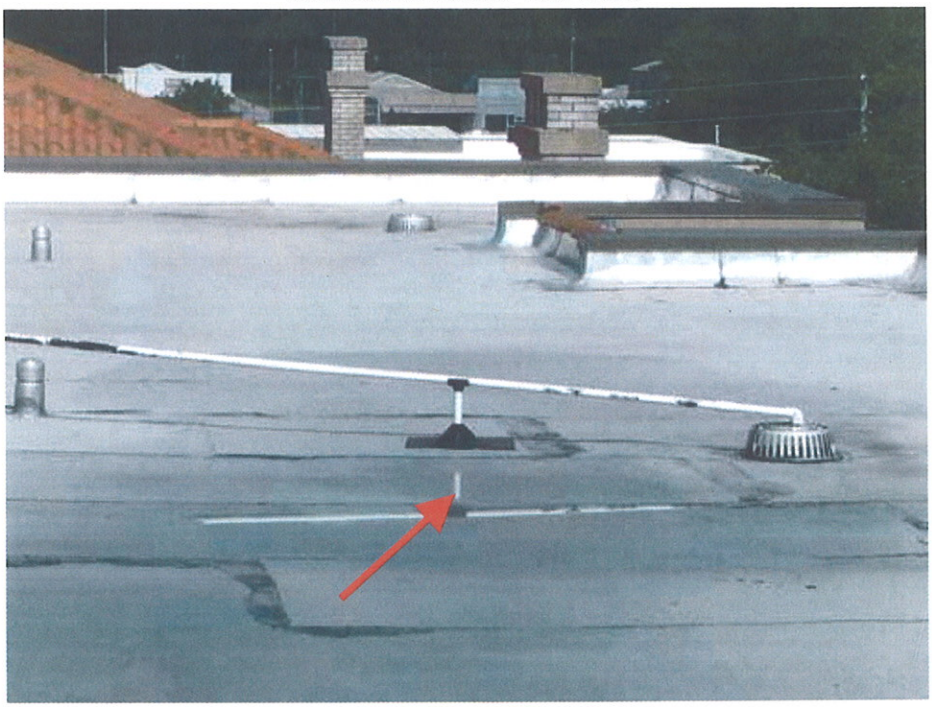
Assembly Condition: Good

Component Condition: **Modified Bituminous Membrane:** The membrane is in good condition with excellent granule embedment, high pliability, and proper interplay adhesion. Some areas of the roof pond rainwater and will prematurely deteriorate without correction.

Metal Flashings: The aluminum flashings are in good condition.

Prognosis: The modified bituminous roofing assembly was installed approximately 5 years ago and remains in good condition. With proper repairs and periodic maintenance, the this roofing assembly, can be expected to remain effective for an additional 15 years.

PONDING ON MODIFIED BITUMINOUS MEMBRANE. PONDING WILL CAUSE PREMATURE DETERIORATION OF MEMBRANE. MOST OF THE PONDING APPEARS TO BE THE RESULT OF CLOGGED ROOF DRAINS.



MINOR PONDING ON MODIFIED BITUMINOUS MEMBRANE.

ROOF TYPE 3 OF 3 - MODIFIED BITUMINOUS ROOF MEMBRANE OF ADDITION - 3.10.1

RECOMMENDATIONS

General: This report identifies the current condition of the major building envelope assemblies. The repair of the defective and deteriorated components is essential to prevent rainwater intrusion which is damaging interior finishes and could eventually damage roof and wall structural components. The repairs described below are intended to make the building relatively watertight and along with a periodic comprehensive maintenance program will maximized the effective life of the assemblies. Some of the repairs also respond to the historic nature of the original courthouse.

1.0 Exterior Walls:

Condition Summary: All of the exterior brick walls were constructed with a raked joint which is vulnerable to water intrusion because rainwater tends to lay of the top exposed surface of the brick and seep into the cracks and joints of the adjacent mortar. The mass of the original courthouse walls are thick enough to contain the water before the water seeps through the wall and damage the interior finishes. The only exception to this are the walls above the tile roof and the walls above the addition roofs. Rainwater is intruding through these walls in several areas and is damaging ceiling finishes below.

The exterior brick walls of the additions were constructed with a drainage cavity which relies upon the waterproofing behind the brick for watertightness. However, some areas of the walls were constructed with no waterproofing. The extent of this lack of waterproofing is not known due the concealed surfaces of the concrete block behind the brick.. An extensive amount of rainwater intrusion is occurring through the exterior walls of the additions, especially around the windows which are also not watertight as described below.

The mortar joints are deteriorated in varying degrees at both the original courthouse and the addition.

Repair Approach: The most cost effective approach is the re-pointing of all existing mortar joints and replace with a more watertight joint type and the application of a clear dampproofing over all brick wall assemblies.

Repairs:

1.1 Re-point all mortar joints with concave tooled joints.

1.2 Prepare all wall surfaces and apply a clear penetrating dampproofing. The dampproofing should be reapplied every 8 to 10 years.

1.3 Remove all sealants in the exterior walls, prepare surfaces, and install silicon sealant with .closed cell backer rods.

CONTINUED

2.0 Exterior Windows:

Condition Summary: The original courthouse windows are in poor condition and would require extensive repairs to correct the open joints and wood deterioration. The steel windows are severely rusted and repairs would not be practical. A significant amount of rainwater is intruding through many of the aluminum windows and repairs would only be temporary with the use of sealants. In addition, the through-wall flashing above aluminum windows was not properly installed.

Repair Approach: The most cost effective approach is the replacement of all existing windows with a extruded aluminum window that replicates the historic characteristics of the original courthouse windows. This approach also would provide windows with current wind resistance standards including a large missile impact rating which is important for protection of critical use facilities such as courthouses. In addition, the replacement of all windows would provide a unified appearance for the entire building.

Repairs:

2.1 Remove all existing windows and replace with an extruded aluminum, hurricane resistant window which replicates the historic windows of the original courthouse.

2.2 Replace all existing sealants with a silicon sealant and closed cell backer rod.

2.3 Remove three rows of brick above all existing windows of the additions, install through-wall flashing, and install new brick where the existing brick was removed.

3.0 Exterior Doors:

Condition Doors: The original courthouse door frames are in poor condition and would require extensive repairs to correct the open joints and wood deterioration. The original courthouse doors are in fair condition. The aluminum frames and doors of the addition are in fair condition.

Repair Approach: If the decision is made to replace the windows, the doors should also be replaced with extruded aluminum door frames and doors that replicates the historic characteristics of the original courthouse frames and doors. This approach also would provide door assemblies with current wind resistance standards including a large missile impact rating which is important for protection of critical use facilities such as courthouses. In addition, the replacement of all door assemblies would provide a unified appearance for the entire building.

Repairs:

3.1 Remove all existing windows and replace with an extruded aluminum, hurricane resistant doors which replicates the historic doors of the original courthouse.

3.2 Replace all existing sealants with a silicon sealant and closed cell backer rod.

3.3 Remove three rows of brick above all existing doors of the additions, install through-wall flashing, and install new brick where the existing brick was removed.

CONTINUED

4.0 Tile Roofs:

Condition Summary: All tile roofs are in general good condition requiring only minor repairs.

Repair Approach: Completion of the minor repairs and implementation of a maintenance program will maximize the expected effective life of the roofing assembly.

Repairs:

4.1 Examine all exposed tile underlayment and replace any deteriorated underlayment.
4.2 Examine all tile and re-secure all loose tile.
4.3 Repaint all exposed wood eave components.

5.0 Modified Bituminous Roofs:

Condition Summary: All modified bituminous roofs are in general good condition requiring only minor repairs.

Repair Approach: Completion of the minor repairs and implementation of a maintenance program will maximize the expected effective life of the roofing assembly.

Repairs:

5.1 Conduct roof maintenance including the cleaning of all roof drains..
5.2 Contact the manufacturer of the roof membrane to provide a written report of the roof condition and include any required repairs or maintenance necessary to maintain the current roof warranty.